What is claimed is:

1. In a wastewater treatment facility comprising an aeration phase having a plurality of zones, a settling phase, and a digestion phase, an activated sludge wastewater treatment process comprising the steps of:

partitioning the zones of said aeration phase so that approximately 20% to 45% of the volume of the aeration zones are operated as reaeration zones;

operating a portion of said reaeration zones in a manner substantially equivalent to the Kraus process wastewater treatment method, said Kraus process comprising the aeration of activated sludge returned from said settling phase and the addition of a portion of the supernatant from said digestion phase;

returning activated sludge from said settling phase to the upstream portion of said reaeration phase; the return activated sludge flow rate typically less than 60% of the wastewater influent flow rate; and

controlling the concentration of mixed liquor suspended solids in said aeration phase so that the typical ratio of MLSS between said reaeration zones and said other aeration zones is equal to or greater than approximately 2:1;

whereby the process realizes an average influent volumetric loading capacity greater than approximately 3.2 kg BOD_5/m^3day.

2. The method of claim 1, further comprising the step of passing at least a portion of said return activated sludge through a biological selector at a location generally upstream of said aeration zones, said selector operated so that the dissolved oxygen concentration in said selector is approximately 0.

3. The method of claim 1, further comprising the step of controlling at least a portion of said return of activated sludge by process automation, said automation based on at least one measurement of a property of the solids in said aeration phase.

4. The method of claim 1, further comprising the step of measuring the respiration rate of the solids in said reaeration zones and selecting a process variable set point based on the result of said measurement.

5. The method of claim 2, further comprising the step of measuring the respiration rate of the solids in said reaeration zones and selecting a process variable set point based on the result of said measurement.

6. The method of claim 5,further comprising the step of controlling at least a portion of said return of activated sludge by process automation, said automation based on at least one measurement of a property of the solids in said aeration phase.

7. In a wastewater treatment facility comprising an aeration phase having a plurality of zones, a settling phase, and a digestion phase, an activated sludge wastewater treatment process comprising the steps of:

partitioning the zones of said aeration phase so that approximately 20% to 45% of the aeration zones are operated as reaeration zones;

operating a portion of said reaeration zones in a manner substantially equivalent to the Kraus process wastewater treatment method, said Kraus process comprising the aeration of activated sludge returned from said settling phase and the addition of a portion of the supernatant from said digestion phase;

controlling the concentration of dissolved oxygen in said aeration phase so that the typical concentration of dissolved oxygen at the downstream end of said Kraus process aeration zone is generally at least three times the concentration of dissolved oxygen at the downstream end of the other of said reaeration zones;

returning activated sludge from said settling phase to the upstream portion of said reaeration phase; the return activated sludge flow rate typically less than 60% of the wastewater influent flow rate; and

controlling the concentration of mixed liquor suspended solids in said aeration phase so that the typical ratio of MLSS between said reaeration zones and said other aeration zones is equal to or greater than approximately 2:1;

whereby the process realizes an average influent volumetric loading capacity greater than approximately 3.2 kg BOD_5/m^3day and an average nutrient removal rate greater than 0.005 lbs nitrogen per lb volatile suspended solids.

8. The method of claim 7, further comprising the step of passing at least a portion of said return activated sludge through a biological selector at a location generally upstream of said aeration zones, said selector operated so that the dissolved oxygen concentration in said selector is approximately 0.

9. The method of claim 7, further comprising the step of measuring the respiration rate of the solids in said reaeration zones and selecting a process variable set point based on the result of said measurement.

10. The method of claim 7, further comprising the step of controlling at least a portion of said return of activated sludge by process automation, said automation based on at least one measurement of a property of the solids in said aeration phase.

11. The method of claim 8, further comprising the step of measuring the respiration rate of the solids in said reaeration zones and selecting a process variable set point based on the result of said measurement.

12. The method of claim 11, further comprising the step of controlling at least a portion of said return of activated sludge by process automation, said automation based on at least one measurement of a property of the solids in said aeration phase.